

PROF. LADISLAV ČELAKOVSKÝ.

AFTER a long and painful illness, due to a serious internal malady of many years' standing, Prof. Čelakovský, the well-known and brilliant botanist, passed away at Prague on November 24, at the age of sixty-seven.

It was with the morphological department of botanical science that Čelakovský chiefly identified himself.

His papers dealing with evolutionary problems appear to date from the year 1868 with the memoir "On the General Evolution of the Vegetable Kingdom." The theses "On the Different Forms and the Meaning of the Alternation of Generations in Plants" (1874) and "On the Threefold Alternation of Generations in the Vegetable Kingdom" (1877) appear to us to afford so adequate a solution of this great subject as to cause wonder that botanists should still vex their minds by discussion of it. Two treatises which must long keep his memory green, while helping to establish the supremacy of his genius, are those on "The Law of Reduction in Flowers" (1894) and on "The Evolution of the Flower," in two parts (1896 and 1900); at the latter end of the second part, an interesting discussion and, in our view, a probable solution of the of late much-debated phenomenon of "double-fertilisation" in Angiosperms is introduced. These works of our author are, we fear, far too little known or appreciated.

To many botanists, Čelakovský will be best known by his voluminous writings, published in many and various periodicals, on the morphological nature of the ovule, a subject which occupied his attention from 1874 onwards and which his surpassing talent completely illuminated. Both in this and other difficult cases, he relied almost entirely on teratological evidence for the final solution of the problem. It is this position, well brought out in his memoir in *Lotos* of 1874, "On the Relationship between the Different Methods of Morphological Research," which caused so much opposition to him from fellow-workers in the same fields.

During the latter part of his career, Čelakovský performed the enormous service of what we consider to be the complete unravelling and elucidation of the nature of the female flower in Coniferae, a subject hitherto utterly obscure and bristling with difficulties, but now, to our mind, entirely solved once for all. The author's views are contained chiefly in "Die Gymnospermen" (1890) and "Nachtrag zu meiner Schrift über die Gymnospermen" (1897).

Another important field of botanical research yielded scope for the display of his great powers, viz., that connected with the building-up of the stem and its members. Three of the principal papers treating of this subject are "On Terminal Members" (1876), "On Cases of Branching Underlying the Phytostatic Law" (*Pringsheim's Jahrbücher*, vol. xxxii.) and "The Segmentation of the Stem" (1901). The latter is an elaboration and wide expansion of the bare principles laid down long ago by Gaudichaud, and revolutionises all modern conceptions of the subject.

Many memoirs have, of necessity, been left unnoticed in this brief sketch; suffice to add that what appears to have been the last paper published by him, at least in German, was that on "The Cortication of the Stem by Leaf-bases," which appeared in 1902.

W. C. W.

NOTES.

WE published last week the wireless telegram sent by President Roosevelt to the King and also His Majesty's reply thereto. This latter message was not sent by wireless telegraphy, the reason being that at the time it was dispatched the nearest telegraph office to Poldhu was closed, and so it was impossible to

get the message to Poldhu, though its transmission from there to America could have been easily effected. The *Times* of Monday deals with this difficulty in a leader, and points out that the Post Office as a public institution ought immediately to afford the facilities of connection between Mullion and Poldhu for which the Marconi Company asks. It is only a matter of erecting a couple of miles of telegraph line and providing for a continuous service, and this should certainly be done without any delay. The Post Office is said to be "considering the matter," but in the interests of the public and in fairness to the Marconi Company, the "consideration" ought to be cut short and the necessary connection made at once. As the *Times* rightly says, any questions of the ultimate trustworthiness and utility of the wireless system or of our telegraphic relations with the cable companies or other States have nothing to do with the Post Office, at any rate at the present time. All they are asked to do is to provide facilities for telegraphing to a customer likely to make large use of them. It is sincerely to be hoped that the Post Office will realise that it owes it as a duty to the public to remove immediately this purely artificial hindrance to the development of what may possibly be a great commercial enterprise. Such action would be impossible in any other country.

AN influential committee has been formed in Rome to take measures to honour the memory of Father A. Secchi, S.J., the distinguished astronomer and meteorologist, on the occasion of the twenty-fifth anniversary of his death, which occurred on February 26, 1878. The president of the committee, Father G. Lais, S.J., vice-director of the Vatican Observatory (address, Via Torre Argentina, 76, Rome), will be glad to add the names of scientific men and institutions to the list of those interested in this celebration. Father Secchi was for many years director of the observatory of the Collegio Romano, now occupied by the Italian Central Meteorological Office, and his well known meteorograph was erected there in 1858. It was in connection with this observatory that almost all Secchi's work was done in solar and terrestrial physics. He published several volumes of the *Memorie dell' Osservatorio del Collegio Romano*, 1852-1863, and began, in the year 1862, the *Bolletino meteorologico*, of which seventeen volumes appeared, and contained many valuable discussions by himself and others. The Italian Spectroscopic Society owes its foundation to his energy. He was the author of numerous papers and also of books on the sun, the stars and the unity of physical forces.

PROF. E. B. POULTON, F.R.S., has been elected president of the Entomological Society for the session 1903-1904. Prof. Poulton has nominated as vice-presidents the Rev. Dr. Fowler, Prof. Meldola, F.R.S., and Dr. D. Sharp, F.R.S.

At a general meeting of the Linnean Society on January 15, it was resolved to take the necessary steps to obtain a supplementary charter embodying certain alterations in the constitution of the Society. A motion was carried in favour of adding the words "without distinction of sex" to the existing paragraph of the charter referring to the admission of fellows, so that when the supplementary charter has been obtained, women will be eligible for election into the Society.

ON Saturday, January 24, a cone 800 feet in height is reported to have been blown off Mont Pelée by a volcanic eruption.

A TELEGRAM, through Reuter's Agency, received at New York from Kingstown, St. Vincent, states that an eruption of the Soufrière occurred at noon on January 22. A whirling, incandescent cloud was seen to shoot from the volcano clear into the sky, followed by a black cloud, which rapidly ascended to a great height and was visible throughout the island. Sand fell at Château Belair.

THE Central News Agency states that the severest earthquake shock experienced at Charleston since the disaster of 1886 visited this city during the night of January 23. A number of other cities in South Carolina and Georgia were similarly affected.

REFERENCE has already been made to the proposal to form a society of persons interested in electrochemistry. We are glad now to announce that, as the result of the support and encouragement received in response to the circulars recently issued, it has been resolved to hold a general meeting of the supporters of the movement to inaugurate the work of the society and elect a president and council. The meeting will be held at the rooms of the Faraday Club, St. Ermin's Hotel, Westminster, on Wednesday, February 4, at 5 p.m. Dr. J. W. Swan, F.R.S., has consented to be nominated as president, and the following have accepted nomination as vice-presidents:—Prof. A. Crum-Brown, F.R.S., Sir Oliver T. Lodge, F.R.S., Dr. Ludwig Mond, F.R.S., Lord Rayleigh, F.R.S., Mr. Alexander Siemens and Mr. J. Swinburne.

THE twenty-first congress and exhibition of the Sanitary Institute will be held at Bradford, commencing on July 7.

As the work of the Photographic Record Association is attracting much attention, it is of interest to note that at the meeting of the Essex Field Club on Saturday next, Mr. A. E. Briscoe will bring forward proposal for a photographic and pictorial survey of Essex, to be carried on in connection with the county Museum of Natural History. Anyone wishing to attend should apply to the secretaries, Buckhurst Hill, Essex.

THE Eleventh International Congress of Hygiene and Demography will be held in Brussels on September 2-8 under the patronage of H.M. the King of the Belgians. The secretary-general of the congress is Prof. F. Putzeys. All information and programmes can be obtained from Dr. Paul F. Moline, 42 Walton Street, Chelsea, S.W., the hon. secretary of the British committee.

A REUTER message from St. Petersburg states that two members of Baron Toll's polar expedition, Lieutenant Matissen, commander of the yacht *Zaria*, and Lieutenant Kolchak, have just arrived in St. Petersburg with nine men of the *Zaria's* crew, after an absence of two and a half years.

IT is announced that Dr. Jean Charcot will leave in mid-May for a tour of Arctic exploration in a yacht built in cast steel, and fitted up and manned at his own expense. Dr. Charcot, the *Daily News* Paris correspondent says, is paying great attention to the laboratory fittings and apparatus. His scientific staff will include a zoologist, an expert in oceanography, a bacteriologist, a geologist and a botanist. Provisions for eighteen months will be taken on board, though the expedition is to last but six months.

REFERRING to the recent death of Joseph Chavanne, the Austrian geographer and meteorologist, the *Athenaeum* states that in 1875 he was at work at Vienna in the Imperial Meteorological Institute, and in the same year became editor of the Austrian *Mitteilungen der Geographischen Gesellschaft*. In 1884, he was commissioned by the Brussels Geographical Institute to undertake a topographical survey of the district between the Congo and the Kuilu-Niadi on one side, and between the mouth of the Congo and the Equator station on the other side.

WE learn from *La Nature* that M. H. Poincaré has been promoted to be Commander of the Legion d'Honneur. M. Mascart succeeds M. Berthelot, who has resigned, as the representative of the Collège de France on the Superior Council of Public Instruction. M. Gautier has been elected president of the Bureau des Longitudes; M. Lippmann is the new vice-president and M. Radau the new secretary.

IN addition to the sums which the German Government proposes to allocate for the prevention of typhoid fever and the collection of sickness and mortality statistics, the Imperial budget for the coming year provides, we learn from the *British Medical Journal*, a sum of 3250*l.* for the carrying out of experimental researches directed to the further elucidation of the relation between human tuberculosis and the *Perlsucht* of cattle. The problem of protective inoculation of cattle against tuberculosis falls within the scope of these researches.

ON Thursday next, February 5, at 5 o'clock, Sir Clements Markham will deliver the first of a course of three lectures at the Royal Institution on "Arctic and Antarctic Exploration." Mr. G. R. M. Murray being unable, owing to illness, to deliver his course of lectures beginning on Thursday, February 26, Prof. L. C. Miall will instead deliver three lectures on "Insect Contrivances." The Friday evening discourse on February 6 will be delivered by the Right Hon. Sir Herbert Maxwell, on "George Romney and his Works"; on February 13 by Prof. S. Delépine, on "Health Dangers in Food"; and on February 20 by Principal E. H. Griffiths, on the "Measurement of Energy."

AT a meeting of the Vienna Academy of Sciences on December 11, 1902, Dr. J. Hann presented an important paper on the daily rotation of the mean wind direction and on a semi-diurnal oscillation of the atmosphere on mountain peaks of two to four kilometres above sea level. The author has deduced from anemometrical records the wind components according to the four rectangular directions and has calculated the daily range by means of trigonometrical series. The differences of the hourly values from the daily means obtained in this way exhibit the daily variation both of direction and force, freed from the prevalent wind direction and depending only on the influence of the sun. He has shown in this way that the wind daily rotates regularly with the sun, being easterly in the morning, southerly at noon, westerly and north-westerly in the afternoon and northerly at night. The author has next investigated the daily changes of the wind components and has exhibited their harmonic constituents. The most important result is that in all four components, especially the north and south, a large semi-diurnal period exists, which equals or even exceeds that of the whole-day period in magnitude. The regularity of the phase periods and the magnitude of the semi-diurnal period make it appear probable that this regular daily oscillation of the atmosphere at a height of two to four kilometres is connected with the regular daily oscillation of the barometer. The daily range of mean wind force was also found to follow the same rule on the mountain peaks as on the earth's surface, at all directions attaining its maximum force at nearly the same time, the maximum, however, occurring at nighttime instead of soon after noon.

WE have received vol. vi. of the *Pubblicazioni della Specola Vaticana* (Roma: Tipografia Vaticana, 1902). The first 326 pages are devoted to the meteorological observations made during the years 1895-1901. The observations are printed in full detail, the values for each hour of observation for barometer, aspect of sky, direction and velocity of wind, thermometers, vapour tension, relative humidity, evaporation, &c., being given. Then follow another set of meteorological observations made daily at 9 o'clock during the year 1901. The velocity of the wind and description of the sky are next given for three observations every day during the year 1895. At the end of the volume is given a series of plates, which illustrates graphically the variations of the principal meteorological elements from day to day during each year. More than one hundred pages contain details of the observations of meteors made during the months of

August and November for the years 1896-1901. From a statistical point of view, the volume will prove useful, but it seems a pity that observations should be kept so long before they are published.

THE paper on electric automobiles read by Mr. H. F. Joel before the Institution of Civil Engineers on January 13 is one of great interest. The desirability of the automobile replacing horse traction from a sanitary point of view is probably admitted by everyone, and certainly the electric car would afford the best solution. Mr. Joel is of opinion that there is a great future before the electric automobile, which has already proved itself capable of running 100 miles on one charge and of performing much longer tours. This shows that even the storage battery of to-day is sufficiently good to give very satisfactory results; the author in his paper goes carefully into the results of the battery tests made by the Automobile Club of France, and into the question of the ratio of weight of vehicle to weight of battery. Many valuable curves showing the relations between ton-mileage, total weight, useful load, &c., are given, and the paper is, on the whole, a valuable contribution on the subject.

A SERIES of papers by Dr. Quirino Majorana in the *Atti dei Lincei* of last summer are devoted to the phenomena of magnetic double refraction and the so-called "bimagnetic rotation" of the plane of polarisation. The phenomena were observed by fixing a column of liquid 7 cm. long between the poles of a Weiss electromagnet, the solutions best suited for the purpose being chloride of iron and still better "dialysed iron." The bi-refraction is proportional to the thickness of the liquid column, which is normal to the lines of force and also to the degree of concentration of the solution. For different colours, it varies inversely as the square of the wave-length. Experiments conducted with the view of ascertaining the rapidity with which the phenomena are produced tend to show that, like rotatory polarisation and Kerr's phenomenon, it takes place instantaneously. Dr. Majorana's phenomenon of "bimagnetic rotation," which has already been noticed in these columns, is discussed in conjunction with Voigt's highly probable explanation that it owes its origin to the unequal absorption of the light-components polarised along and perpendicular to the lines of force. It is obvious that in a ray polarised on entrance in a direction making an angle of, say,  $45^\circ$  with the lines of force, the effect of such an unequal absorption would be to deflect the plane of polarisation towards the direction in which the absorption is least. The phenomenon is observed in certain impure solutions of ferric chloride; it is approximately proportional to the thickness of the liquid traversed, at any rate when the deviation is small. As the intensity of the field increases, the deviation at first increases rapidly and then tends to a constant limit. From theoretical grounds, it follows that if the planes of polarisation on incidence and emergence make angles  $\alpha$  and  $\beta$  with the lines of force, the ratio of  $\tan \alpha$  to  $\tan \beta$  is constant, and hence  $\sin(\alpha - \beta)$  is proportional to  $\sin(\alpha + \beta)$ , so that the deviation  $(\alpha - \beta)$ , being small, is proportional to  $\sin(\alpha + \beta)$ , and hence is a maximum when the angles are nearly  $45^\circ$ , agreeing with the results of experiment.

THE U.S. Department of Agriculture has issued two reports, one by Dr. W. O. Atwater and Dr. F. G. Benedict, on the metabolism of matter and energy in the human body, and the other by Prof. Charles E. Wait, drawn up under the immediate supervision of Prof. Atwater, dealing with the effect of muscular work on the metabolism of nitrogen and the digestibility of food. These reports form a part of the nutrition investigations for which a special committee has been appointed by the Department. The first report deals with thirteen experiments, forming part of a series which are in progress at Middletown, Conn., and which have for their ultimate object the study of the

laws of nutrition. The Atwater-Rosa respiration calorimeter used in the experiments is shown to be a satisfactory instrument of precision, and the conclusions, besides affording information as to the demands of the body for nutriment, and the effect of muscular work on digestion and metabolism, afford evidence little short of definite demonstration that the principle of conservation of energy holds good in living organisms.

THE first part of an illustrated paper, by Dr. H. von Buttel-Reepen, on the phylogenetic relationship of bees' nests, and the biology of solitary and social bees, appears in the *Biologisches Centralblatt* for January.

WE have received a copy of the *Transactions* of the Yorkshire Naturalists' Union for 1900, containing reports on the Lepidoptera and also on the botany and meteorology of the county.

IN part i. of the third volume of *Annals* of the South African Museum, Dr. W. F. Purcell describes new genera and species of the arachnoid family Solpugidae and also certain typical Arachnida.

THE *Zoologist* for January contains an account, by Mr. W. F. Raunsley, of a South American quaker-parrot (*Myiopsittacus monachus*)—said to be the only nest-building species of its tribe—building in the open in the New Forest, near Lyndhurst. The nest, which was of large size, was constructed in the angle of the roof of a house. It is not the first time that birds of this species have nested in the open.

WE have received two fasciculi of the *Proceedings* of the U.S. Museum (Nos. 1311 and 1312). In the former, Mr. J. E. Benedict describes as new one genus and forty-six species of the crustacean family Galatheidæ, with a list of all the known marine representatives of the group. In the latter, Mr. W. H. Dall gives a synopsis of the molluscan family Veneridæ, with a list of the existing North American species, among which many are new.

THE *Fishing Gazette* of January 17 relates a curious incident which occurred at the fish-breeding establishment at Helmsbach, Germany, on July 3, 1899. In one of the buildings were some tanks containing a number of live trout about to be dispatched to Berlin. During a thunderstorm, a heavy flash of lightning appeared to strike the building, and on examination it was found that all the fish in the tank next an open window were dead. Although the wire-netting covering the tank was not damaged and the fish themselves showed no special signs of having been struck, there seems every probability that the deaths of the latter were caused by the lightning. A similar experience was recorded in Germany in 1901, and some years ago, after a severe thunderstorm, a number of large trout were found dead in a pool in our own Lea.

THE *Quarterly Review* for January contains three articles connected with biological science. In the first, Mr. Lydekker discusses the origin of the present and past vertebrate faunas of South America, devoting special attention to the fossil mammals and birds of the pampean formation of the Argentine and the Santa Cruz beds of Patagonia. It is shown that at the epoch of the deposition of the latter, South America was insulated and inhabited mainly by a fauna of edentates, peculiar ungulates, rodents, monkeys, marsupials and giant birds. A subsequent connection with North America permitted the immigration of northern types, while, conversely, a certain number of southern forms effected an entrance into North America. As to the origin of the primitive South American fauna, there is still much uncertainty and speculation, but it is considered probable that a contingent was furnished from Africa by means of a land-bridge. Some remarkable evidence is cited in regard to the



possible survival of one of the ground-sloths to modern times. The article is illustrated by figures of the remains of some of the extinct forms.

IN the second article—"A Conspectus of Science"—Sir Michael Foster tells the history of the founding of the "International Catalogue of Scientific Literature," three parts of the first volume of which had been issued at the date of going to press. The immense value of the Royal Society's "Catalogue of Scientific Papers" is fully acknowledged; but the absence of a "subject-index" and the omission of all literature other than periodical render this publication—even if it could be continued—inadequate to present requirements. Finally, a brief reference is made to the portions of the "International Catalogue" for 1901 already published, and the hope is expressed that when the staff has got into full swing, the annual volumes will be produced in a shorter space of time.

THE third article in the January number of the *Quarterly* contains a review of a dozen works, for the most part on sport and travel, but including President Roosevelt's volume on deer in the "American Sportsman's Library." The latter work, together with Mr. J. G. Millais's volume on wild-fowl shooting in Scotland, has been already noticed in *NATURE*. The list also includes Prince Demidoff's two volumes on big-game shooting in the Caucasus and the Altai and Mongolia, Mr. Powell-Cotton's account of his recent Abyssinian expedition and Mr. W. P. Church's "Chinese Turkestan with Caravan and Rifle." The reviewer directs special attention to three features connected with modern sport—the comparative ease with which regions long thought practically inaccessible can be reached, the destruction of game all over the world and the means which should be taken for its preservation, and the advantage of rifles firing small projectiles at great velocity over weapons of larger calibre.

THE evolution of the northern part of the lowlands of south-eastern Missouri, by Prof. C. F. Marbut ("University of Missouri Studies," vol. i. No. 3, 1902), forms the subject of an essay on river development. The author endeavours to show how the Mississippi has abandoned two valleys and now occupies a third. It has, in his opinion, been twice captured by the smaller Ohio river.

REFERRING to our report of Prof. J. B. Farmer's remarks at the Chelsea conference (*NATURE*, January 15, p. 260), in which mention is made of the conditions under which larch grows, Mr. Hawie Brown gives some particulars of his own experience in the cultivation of this kind of tree. He says, "the best and healthiest and oldest Scottish larch grows on hill-slopes facing the north, where there is not a great depth of soil, but often a thin soil resting on a shaly bed." Prof. Farmer has kindly supplemented our brief reference to his instance of the frequent lack of conscious and common-sense appreciation of the relations existing between cause and effect in the cultivation of crops which has led to the planting of a tree like larch in localities and under conditions obviously unsuitable for it. He adds, "of course the larch is a mountain tree, and the whole point of the illustration lies in the fact that in this particular instance the shallow soil overlying the rock was of a 'sour' and poor character, as indicated by the indigenous weed vegetation. It is generally accepted that the larch is a tree making considerable demands on the soil, both as regards fertility and depth—or, at least, of openness."

OBSERVATIONS on fluctuations in the level and in the alkaline character of the ground water have been made by Mr. W. P. Headden at the Agricultural Experiment Station, Fort Collins, Colorado (*Bulletin* 72, Agricultural College of Colorado, August, 1902). The total salts held in solution in the well waters were

less than in the water in the soil. As the water-plane falls, it leaves much saline matter in the soil, but the total solids in the ground water varied greatly in the different wells and also from time to time in each well. Reference is made to the salts that occur at different depths in the soil, to the abundant formation of nitric acid in the upper layers and to the effects of irrigation.

AN ecological memoir possessing more than ordinary merit is the report on a botanical survey of the Dismal Swamp region, compiled by Mr. T. H. Kearney and published by the U.S. Department of Agriculture. The interest lies, not only in the nature of the associated formations, but is also due to the descriptions accompanied by very admirable and well-chosen illustrations. The region surveyed lies between Chesapeake Bay and Albemarle Sound, and is marked by a series of inlets extending into or towards the inundated swamp area. A peculiar feature of these marshy inlets is the *Baccharis-Hibiscus* formation on the inner edge. Here *Baccharis halimifolia* is conspicuous with a snow-white pappus, and colour is added by *Hibiscus moscheutos* and *Kosteletzkya virginica*, another malvaceous plant. From the coast, a series of dunes leads up to



FIG. 1.—Incursion of the sand on inland vegetation near Cape Henry, Virginia.

the forest. A remarkable plant found on the outer dunes is the aromatic composite *Iva imbricata*. The dunes are encroaching upon the inland vegetation, though not so rapidly as might be expected. Where the dunes are exposed, there the sand is piled up in hillocks, higher even than the neighbouring forest. The illustration which is reproduced shows how the banked-up sand, with a steep inner slope which may approach an angle of 45°, is pouring down on the trees growing in the swampy ground, the desert as it is called, while on the slope some old cypress trees still bearing a few leaves are gradually being overwhelmed in the drift. On the western side is situated Lake Drummond, a small patch in the extensive swamp, where the water has varied from 6 to 15 feet. A weird appearance more especially near the shore is presented by the stumps of old cypress trees, and still more fantastic are the aerating processes, the knees of the bald cypress, *Taxodium distichum*, and the arching roots of the same plant and of the black gum *Nyssa biflora*.

THE *Proceedings* of the Liverpool Geological Society for the session 1901-1902 (vol. ix. part ii., 1902) contain an interesting

address, by Mr. Charles C. Moore, on the volume composition of rocks. He deals with the porosity of various rocks and observes that in many cases the appearance of the specimen does not give the slightest clue to its actual porosity. Comparisons are made between various rocks of similar chemical or mineralogical composition. The effect of pressure in the faulting of a sandstone has been used to calculate the amount of displacement. The structural changes that would occur from the conversion of a bed of limonite into hæmatite are pointed out. The subject is one of considerable practical importance. Among other papers is one by Prof Bonney, on fragmental rocks as records of the past.

MR. HUGH J. L. BEADNELL has given an account of the Cretaceous region of Abu Roash, near the pyramids of Giza (Geological Survey Department, Egypt, 1902). The area lies near the edge of the Libyan Desert, some distance west of Cairo, and it is composed of an isolated massif of Cretaceous rocks in the midst of an unconformable and overlapping tract of Eocene strata. These structural relations have not hitherto been determined. Owing to the highly disturbed nature of the beds, due, as the author explains, to pre-Eocene folding and faulting, it has been a difficult matter to work out the complete succession in the Cretaceous rocks; but this has now been done, and Cenomanian, Turonian, Senonian and Danian subdivisions have been determined. Particulars of these and their fossils are given, together with illustrative sections and excellent photographic views of scenery, and there are brief descriptions of the Eocene and newer deposits. The author observes that the effects of the action of wind-borne sand in the denudation of rocks are perhaps more beautifully displayed at Abu Roash than in most other localities in the western desert—a fact due in great measure to the abundance of hard cherty and crystalline limestones, which so well exhibit the effects. Illustrations of these are given.

A THIRD edition of "Modern Microscopy," by Mr. M. I. Cross and Mr. Martin J. Cole, has been published by Messrs. Baillière, Tindall and Cox. The book has been completely revised, and now contains, in addition to the two parts into which the last edition was divided, a third section on the choice and use of microtomes, prepared by Mr. G. West.

MESSRS. WATTS AND CO. have issued, for the Rationalist Press Association, Ltd., a sixpenny edition, in paper covers, of Mr. Herbert Spencer's "Education: Intellectual, Moral and Physical." These essays are all well known to teachers throughout the world, and it is to be hoped that this cheap re-issue will serve to encourage parents everywhere to become familiar with sound principles of education.

THE "Handbook of the Federated Malay States" (Stanford, 2s. 6d.), compiled by Mr. H. Conway Belfield, British Resident of Selangor, contains trustworthy information brought together at the request of the Government for the use of persons interested in the Malay States. Direct guidance is offered to different classes who propose to emigrate to this part of the world. The handbook is well illustrated and plentifully supplied with maps and statistics.

A COPY of the thirty-third of the thirty-six parts of "Living London," being issued by Messrs. Cassell and Co., Ltd., under the editorship of Mr. G. R. Sims, has been received. It contains a section, by Mr. John Munro, on scientific London, profusely illustrated by pictures showing audiences at the Royal Institution, the Royal Geographical Society and the Society of Arts. A full-page illustration depicts the ladies' night at the Royal Society.

AN almanac for 1903, compiled at the offices of the Survey Department of the Public Works Ministry and published at Cairo, has been received. Much of the miscellaneous information

contained in the almanac will be of use to persons in this country personally interested in Egyptian affairs, for example, the conversion tables giving the Egyptian equivalents of English and French money, measures of length and weight. The facts provided deal with every department of administrative activity in the country.

THE eighteenth issue of "Hazell's Annual," that for 1903, has reached us. It is well described by its subtitle as a cyclopædic record of men and topics of the day. Its abundance of information is arranged alphabetically and includes, amongst other matters of interest to men of science, summaries of the work accomplished during 1902 in the chief branches of natural knowledge. Particulars are also given concerning the important scientific societies and of the scientific institutions of a national character, such as the Royal Observatory, the National Physical Laboratory and Kew Observatory.

PROF. LLOYD MORGAN, F.R.S., contributes to the current number of the *International Quarterly* an article on the beginnings of mind. He discusses in the first place the questions, Is mind a product of evolution? second, Is mind a factor in the evolutionary process, and if so, under what limiting conditions? Towards the conclusion of his essay, Prof. Morgan says:—"From the physiological point of view, the conditions of the beginnings of mind would seem to be the differentiation of a control system with conscious concomitants. From the standpoint of behaviour, conscious accommodation through control as the result of individual experience. And what from the psychological point of view? . . . One may surmise that there is, in some dim form of expectation, at least the germ of that looking before and after to which consciousness eventually attains with more and more clearness." Another article in the same magazine deals with ethnology and the science of religion, and Prof. C. Lombroso endeavours to explain why criminals of genius have no type.

THE additions to the Zoological Society's Gardens during the past week include an American Grass Snake (*Contia vernalis*) from Mexico, presented by Miss Green; two Smooth-headed Capuchins (*Cebus monachus*) from South-east Brazil, two Derbyan Wallabys (*Macropus derbianus*), three Brush Turkeys (*Talegalla lathamii*) from Australia, a Blue-fronted Amazon (*Chrysotis oestiva*), a Common Boa (*Boa constrictor*) from South America, deposited; nine Regent Birds (*Sericulus melinus*) from Australia, purchased.

#### OUR ASTRONOMICAL COLUMN.

##### ASTRONOMICAL OCCURRENCES IN FEBRUARY:—

- Feb. 2. 7h. 11m. Minimum of Algol ( $\beta$  Persei).
- 6. 9h. 45m. to 10h. 30m. Moon occults  $\delta^2$  Tauri (mag. 4.7).
- 9. 3h. 56m. to 4h. 49m. Moon occults  $\lambda$  Geminorum (mag. 3.6).
- 9. 11h. 21m. to 12h. 25m. Moon occults  $\delta^8$  Geminorum (mag. 5.0).
- 11. 16h. 47m. to 17h. 45m. Moon occults  $\nu$  Leonis (mag. 4.5).
- 11. Ceres in opposition to the sun (Ceres mag. 7.4).
- 14. Venus. Illuminated portion of disc = 0.951, of Mars = 0.942.
- 15. 11h. 0m. Mars in conjunction with Moon (Mars  $3^\circ 22' N.$ ).
- 19. 4h. 0m. Jupiter in conjunction with the sun.
- 19. 12h. 5m. Minimum of Algol ( $\beta$  Persei).
- 22. 8h. 54m. Minimum of Algol ( $\beta$  Persei).
- 22. Perrine's comet (1902 b)  $2\frac{1}{2}^\circ E.$  of Sirius.
- 25. 5h. 43m. Minimum of Algol ( $\beta$  Persei).
- 27. 11h. 0m. Mercury at greatest elongation ( $26^\circ 58' W.$ ).
- 27. Perrine's comet (1902 b)  $3\frac{1}{2}^\circ N.$  of Sirius.
- 28. Giacobini's comet (1902 d)  $2\frac{1}{2}^\circ S.S.W.$  of  $\epsilon$  Geminorum (mag. 3.2).